

Amendments to Claims

1. (currently amended) A method of making a crystalline metal oxide powder material comprising two or more metal elements combined in uniform proportions with oxygen in the crystal structure, said method comprising:

combining water soluble, crystalline, water containing, oxygen containing inorganic acid salt compounds of at least two of said metals into a body of crystals that contains said two metals in separate compounds;

heating the body of crystals with microwave radiation to remove the water from the crystals and form a liquid mixture containing said water and a uniform distribution of said metal elements;

removing the water under reduced atmospheric pressure to form a dry mixture of metal acid salt compounds; and

heating the dry mixture to decompose said acid to leave a powder residue of said metal oxide powder material.

2. (original) The method as recited in claim 1 in which at least two of said metals are initially contained in hydrated nitrate or hydrated nitrite compounds.

3. (original) The method as recited in claim 2 in which said metal oxide powder comprises two or more metals selected from the group consisting of aluminum, cobalt, lithium, nickel, magnesium and manganese.

4. (original) The method as recited in claim 3 in which said water containing, crystalline, oxygen containing inorganic acid salt compounds are selected from the group consisting of $\text{LiNO}_3 \cdot \text{H}_2\text{O}$, $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$, $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$, $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$, and $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$.

5. (currently amended) A method of synthesizing a LiNiO_2 -type crystalline material of $\text{Li}(\text{Ni}_x \text{M}_{1-x})\text{O}_2$, where M is one or more dopant metals for said crystalline material and $0.5 \leq x \leq 0.7$, said method comprising:

combining water soluble, crystalline, oxygen containing inorganic acid salt compounds of each of lithium, nickel and at least one of said dopant metals into a body of crystals where at least two of said salt compounds contain water;

heating the body of crystals to with microwave radiation remove the water from the crystals and form a liquid mixture containing said water and a uniform distribution of Li, Ni and said dopant metals;

removing the water under reduced atmospheric pressure to form a dry mixture of metal salt compounds; and

heating the dry mixture to decompose said acid to leave a powder residue of said $\text{Li}(\text{Ni}_x \text{M}_{1-x})\text{O}_2$ material.

6. (original) The method as recited in claim 5 in which dopant metals are selected from the group consisting of aluminum, cobalt, magnesium and titanium, said titanium being used as titanium dioxide.

7. (original) The method as recited in claim 5 in which each of said inorganic acid compounds is a nitrate or nitrite compound.

8. (original) The method as recited in claim 6 in which each of said inorganic acid compounds is a nitrate or nitrite compound.

9. (original) The method as recited in claim 7 in which said nitrate compounds are selected from the group consisting of $\text{LiNO}_3 \cdot \text{H}_2\text{O}$, $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$, $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$, $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$, and $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$.

10. (currently amended) A method of synthesizing a LiNiO_2 -type crystalline material of $\text{Li}(\text{Ni}_x \text{M}_{1-x})\text{O}_2$, where M is one or more dopant metals for said crystalline material and $0.5 \leq x \leq 0.7$, said method comprising:

combining water soluble, crystalline, nitrate or nitrite compounds of each of lithium, nickel and at least one of said dopant metals into a body of crystals where at least two of said nitrate or nitrite compounds contain water;

heating the body of crystals with microwave radiation to remove the water from the crystals and form a liquid mixture comprising a solution containing said water and a uniform distribution of Li, Ni and said dopant metals;

removing the water under reduced atmospheric pressure to form a dry mixture of metal salt compounds; and

heating the dry mixture to decompose said acid to leave a powder residue of said Li $(\text{Ni}_x \text{M}_{1-x}) \text{O}_2$ material.

11. (original) The method as recited in claim 10 in which said nitrate compounds are selected from the group consisting of $\text{LiNO}_3 \cdot \text{H}_2\text{O}$, $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$, $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$, $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$, and $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$.